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**Date:** July 21, 2006

**Re:** Attorney Docket: TOR.011.0001.NP **cc:**

☐ **Urgent** ☐ **For Review** ☒ **Please Confirm Your Receipt**

**● Comments:**

In re application of: Sadaji TSUGE  
Serial No.: 09/788,339  
Filed: February 21, 2001  
Title: Solar Cell Module

**Attachments:**

1. Statement of Substance of Interview (3 pages)

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PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Confirmation No.: 1063

Sadaji TSUGE

Art Unit: 1753

Application No.: 09/788,339

Examiner: Alan D. Diamond

Filing Date: February 21, 2001

Attorney Docket:

For: SOLAR CELL MODULE

TOR.011.0001.NP

**STATEMENT OF SUBSTANCE OF INTERVIEW**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

On June 21, 2006, an oral interview was held after draft claims were faxed in

as shown below;

- A. A solar cell module with improved moisture resistance comprising:  
a light incidence front light transmitting member made of a glass containing at least sodium;  
a rear member comprising resin film;  
a plurality of solar cell elements sealed with a sealing resin between the front light transmitting member and the rear member, wherein each of said plurality of solar cell elements includes  
a photoactive hereto junction between a crystalline semiconductor and an amorphous semiconductor, and  
a continuous, uninterrupted thick bulk semiconductor layer interposed between the light incidence front light transmitting member and the photoactive hereto junction that blocks movement of sodium ions from entering the photoactive hereto junction.
- B. A solar cell module as described in claim C, further comprising a first transparent electrode and collector electrode on the front side of the thick bulk semiconductor layer, and a second transparent electrode and collector electrode on the rear side of the thick bulk semiconductor layer
- C. A solar cell module with improved moisture resistance comprising:  
a light incidence front light transmitting member made of a glass containing at least

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sodium;  
a rear member comprising resin film;  
a plurality of solar cell elements sealed with a sealing resin between the front light transmitting member and the rear member, wherein each of said plurality of solar cell elements includes  
a photoactive hetero junction between a crystalline semiconductor and an amorphous semiconductor, and  
a continuous, uninterrupted thick bulk semiconductor layer interposed  
between the light incidence front light transmitting member and the photoactive hetero junction that blocks movement of sodium ions from entering the photoactive hetero junction.

D. A solar cell module with improved moisture resistance comprising:  
a light incidence front light transmitting member made of a glass containing at least sodium;  
a rear member comprising resin film;  
a plurality of solar cell elements sealed with a sealing resin between the front light transmitting member and the rear member, wherein each of said plurality of solar cell elements includes  
a photoactive hetero junction between a crystalline semiconductor and an amorphous semiconductor, and  
a continuous, uninterrupted thick bulk semiconductor layer and also a continuous, uninterrupted highly doped n-type amorphous silicon layer interposed between the light incidence front light transmitting member and the photoactive hetero junction that block movement of sodium ions from entering the photoactive hetero junction.

E. A solar cell module with improved moisture resistance comprising:  
a light incidence front light transmitting member made of a glass containing at least sodium;  
a rear member comprising resin film;  
a plurality of solar cell elements sealed with a sealing resin between the front light transmitting member and the rear member, wherein each of said plurality of solar cell elements includes  
a thick bulk n-type crystalline silicon substrate, having formed thereon at a first surface facing the rear, an intrinsic amorphous silicon layer, a p-type amorphous silicon layer, a transparent electrode, and a collector electrode in this order, and having formed thereon at a second surface facing the front,  
an intrinsic amorphous silicon layer, an n-type amorphous silicon layer, a transparent electrode, and a collector electrode in this order;  
wherein a pin junction is formed between the n-type crystalline silicon substrate and the p-type thin film amorphous semiconductor layer and  
wherein the thick bulk n-type crystalline silicon substrate shields sodium ions from penetrating to the pin junction from the front light transmitting member.

F. A solar cell module with improved moisture resistance comprising:  
a light incidence front light transmitting member made of a glass containing at least

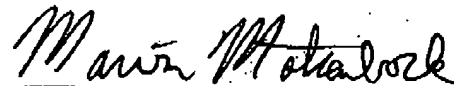
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sodium;  
a rear member comprising resin film;  
a plurality of solar cell elements sealed with a sealing resin between the front light transmitting member and the rear member, wherein each of said plurality of solar cell elements includes  
a thick bulk n-type crystalline silicon substrate, having formed thereon at a first surface facing the rear, an intrinsic amorphous silicon layer, a p-type amorphous silicon layer, a transparent electrode, and a collector electrode in this order, and having formed thereon at a second surface facing the front,  
an intrinsic amorphous silicon layer, a highly doped n-type amorphous silicon layer, a transparent electrode, and a collector electrode in this order;  
wherein a pin junction is formed between the n-type crystalline silicon substrate and the p-type thin film amorphous semiconductor layer and  
wherein the highly doped n-type amorphous silicon layer shields sodium ions from penetrating to the pin junction from the front light transmitting member.

Proposed claims were discussed with respect to the cited art. It was noted that Claim D appeared promising since it recites a continuous, uninterrupted thick bulk semiconductor layer and also a continuous, uninterrupted highly doped n-type amorphous silicon layer. The Examiner opined that there should be an order recited for the semiconductor layers in the device, as in Figure 2. The suggested claims were presented formally in an RCE.

Respectfully submitted,

NDQ&M WATCHSTONE



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July 21, 2006  
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